NHL

Form No 10 300 (Rev 10-74)

THEME: Americans at Work
SUBTHEME: Science and Invention

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Arthur Holly Compton House

AND/OR COMMON: 5637 Woodlawn Avenue

2 LOCATION

STREET & NUMBER: 5637 Woodlawn Avenue

__NOT FOR PUBLICATION

CITY, TOWN: Chicago __ VICINITY OF

CONGRESSIONAL DISTRICT

STATE	CODE	COUNTY	CODE
Illinois	17	Cook	031

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	XXOCCUPIED	__AGRICULTURE	__MUSEUM
X BUILDING(S)	X PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	XX PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		XXNO	__MILITARY	__OTHER

4 OWNER OF PROPERTY

NAME: Robert B. Uretz

STREET & NUMBER: 5637 Woodlawn Avenue

CITY, TOWN: Chicago __ VICINITY OF

STATE: Illinois 60637

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC: County Recorders Office

STREET & NUMBER: 118 North Clark Street

CITY, TOWN: Chicago

STATE: Illinois

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: None

DATE

__FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS

CITY, TOWN

STATE

DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
X EXCELLENT	__DETERIORATED	X UNALTERED	X ORIGINAL SITE
__GOOD	__RUINS	__ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The home of Arthur Holly Compton from the late 1920's to 1945, 5637 Woodlawn Avenue, is a two and one half story brick building. Constructed in 1916 by a Mr. Tetter the building is an example of American domestic architecture of the period and follows no immediately recognizable architectural style. It does not appear to be of architectural importance.

The main entrance to the home is located on the right or south side facing the adjoining residence. There is also a rear entrance from the kitchen to the backyard. The interior is characterized by a central hall plan with a large living room to the left and a dining room and kitchen to the right of the hall. The second floor consists of three bedrooms and a bath. There are two bedrooms in the third floor attic with its dormer windows. The building has undergone no significant alterations since its construction.

Arthur Holly Compton lived at 5637 Woodlawn Avenue, which is near the University of Chicago campus, from the late 1920's until he left Chicago to move to St. Louis in 1945. The building was his principle home during the Chicago phase of his career. While at Chicago Compton announced the Compton effect, conducted his research on X-ray scattering and cosmic rays, and helped lead the development atomic energy for both peaceful and military purposes.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
__1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES late 1920's to 1945 BUILDER/ARCHITECT Mr. Tetter

STATEMENT OF SIGNIFICANCE

In a brief biographical sketch of the life and accomplishments of Arthur Holly Compton, Isaac Asimov, the distinguished author and scientist, writes that, "Compton brought to fruition the view that electromagnetic radiation had both a wave and a particle aspect."[1] Compton's contribution to one of the major new concepts of 20th century physics came in his discovery of what has become known as the "Compton effect," i.e., the increase in wave length, or the reduction in frequency, of X-rays and gamma rays that have been scattered by electrons. The Compton effect is today recognized as one of the basic phenomena of physics. In 1927 the Nobel committee recognized Compton's contribution to physics when it awarded him its pretigious prize accompanied by the simple statement, "for his discovery of the effect named after him."

LIFE

Arthur Holly Compton was born September 10, 1892, in Wooster, Ohio. His father, a Presbyterian minister, taught at Wooster College. Both his father and his mother devoted considerable time to the education of their children. Arthur's brother Karl also enjoyed distinguished career in physics and served as president of the Massachusetts Institute of Technology from 1930 to 1948. (In recognition of the accomplishments of her sons, Mrs. Compton was named mother of the year in 1939.) While still a child Arthur's interest in nature became apparent in his fascination with mechanical toys and in his devotion to stone and butterfly collecting.

After attending local schools Compton entered Wooster College where he studied palenotology and astronomy. Upon graduating from Wooster in 1913 he decided to pursue graduate work in physics at Princeton. Compton received his master's degree in 1914 and completed work for the Ph.D. in 1916. After leaving school he first taught for a year at the University of Minnesota and then went to work for Westinghouse for a year as a research physicist. In 1919 he was appointed a fellow of the National Research Council, an honor that was destined to play a major role in

[1] Isaac Asimov, Asimov's Biographical Encyclopedia of Science and Technology, (Garden City, 1964), p. 644.

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Compton's later career. The fellowship included provisions for a year of study abroad. Aware of the existing work being done in physics by Ernest Rutherford and J. J. Thomson at the new famous Cavendish laboratory at Cambridge, Compton headed for England. During his year at Cambridge Compton participated in investigations involving X-ray scattering, an area of research that a few years later led him to the Compton effect.

Returning to the United States Compton took a teaching position at Washington University in St. Louis. In addition to his teaching responsibilities he continued his research on X-ray scattering. In 1923 the University of Chicago offered him a position and Compton joined the physics department of the Illinois school which counted among its faculty members Robert Millikan. The University of Chicago remained Compton's academic home for the next twenty two years. In 1929 he was appointed the Charles H. Smith Distinguished Service Professor and in other ways enjoyed a stimulating and distinguished academic career. In addition to teaching and conducting research Compton also during these years served as a consultant to the General Electric Company. Like other American physicists he early recognized the military significance of nuclear fission and he strongly supported Enrico Fermi's successful self-sustaining chain reaction experiments. When World War II came Compton assumed a leading position in the Manhattan Engineering District as Director of the Metallurgical Project. Compton was one of the scientists Secretary of War Henry Stimson consulted about the desirability of dropping the atomic bomb on Japan. Compton answered in the affirmative.

In 194S Compton left the University of Chicago to accept the chancellorship of Washington University in St. Louis. The move marked the end of his career as a research physicist. Compton guided Washington University until 19S4. He resigned as chancellor but remained at the university as Distinguished Service Professor of Natural Philosophy. Between 1954 and 1961 Compton's attention focused primarily on the social and moral implications of science's impact on modern civilization. In 1961 he resigned from Washington University. Compton intended to spend the remaining years of his life as a professor-at-large dividing his time among Washington University, the University of California at Berkeley, and his alma mater, Wooster College. His plans were canceled by his untimely death at Berkeley on March 15, 1962.

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WORK

Arthur Holly Compton, recipient of the 1927 Nobel Prize in physics and numerous other awards and honors, was a leading American 20th century scientist. Although Compton made contributions as an academic administrator and as an influential member of scientific organizations and governmental special committees, he is best remembered for his work in pure science physics research. Within the history of physics his fame rests on his discovery of the "Compton effect."

Wilhelm Roentegn's 1895 discovery of X-rays was a stimulus to physicists throughout Europe and America. Among others the distinguished British physicist J. J. Thomson recognized that X-rays would be a powerful source for investigating the nature of matter. Thomson and other British physicists turned their attention to investigating the scattering of X-rays by matter (in a sense X-raying matter and then observing the scattering of the rays by the matter). When Arthur H. Compton arrived at the Cavendish laboratory in Cambridge in 1919, he joined in this work. In assimilating the knowledge derived from previous experimentation, Compton learned that in previous experiments X-rays had been scattered without changing their wave length or frequency but also that in other experiments secondary X-rays possessed a longer wave length than before being scattered. When Compton returned to the United States, he continued his investigations of X-ray scattering both at Washington University and the University of Chicago.

In 1923 Compton published a full discussion of the changes produced in X-rays by scattering. He found that secondary X-rays lengthened their wave length. Although this phenomena was previously known, Compton's theoretical explanation for it was new. Compton held that the radiation had a corpuscular nature in which a quantum or photon of light struck an electron in the matter. The electron then "recoiled" subtracting some energy from the photon and therefore increasing the photon's wave length. The photon thus behaved not like a wave but rather like a particle. The significance of the Compton effect and its explanation was that it suggested that light has both a particle aspect and a wave aspect.

The discovery of the Compton effect created a sensation in physics. For awhile some physicists felt it would be necessary to abandon the basic laws of conservation of energy and momentum in atomic processes. The

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Compton effect stimulated physicists to find a theoretical answer to the wave-particle dilemma. Such was subsequently arrived at in the development of quantum mechanics. The Compton effect thus became a basic phenomena of modern physics.

Beginning in 1930 Compton's interest turned to cosmic rays. His most important achievement in this phase of his career was his discovery of the latitude effect, i.e. cosmic ray intensities are less near the equator than at the poles. Toward the latter part of the 1930's Compton began directing groups of investigators in cosmic rays and spent less time himself in the laboratory.

At the end of the 1930's Compton's energies turned to philosophical and religious matters and he also became deeply involved with the development of nuclear energy. As a prestigious physicist he lent his influence and support to promoting the development of Fermi's famous first self-sustaining atomic chain reaction at the University of Chicago. He fully supported the use of atomic power for military purposes and played a major role in the vast uranium project associated with the Manhattan Engineering District. In his later years in addition to his duties as university chancellor Compton lectured widely and wrote on philosophical and personal subjects.

Arthur Holly Compton's bibliography of books and papers is long. Among his best known works are: Secondary Radiations Produced by X-rays (1922), Freedom of Man (1935), X-Rays in Theory and Experiment (1935, with S. K. Allison), Human Meaning of Science (1940), and Atomic Quest: A Personal Narrative (1956). Compton received most of the prizes and awards society bestows on a distinguished scientist. He was an influential member of all the important scientific organizations and numerous colleges and universities awarded him honorary degrees.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Allison, Samuel K., "Arthur Holly Compton," National Academy of Science Biographical Memoirs, 38 (New York, 1965).
Compton, Arthur H., Atomic Quest: A Personal Narrative (New York, 1956).
Whittaker, E. T., A History of the Theories of Electricity and Aether (New York, 1953).

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than one acre

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	18	450450	4626640
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE
James Sheire, Historian

ORGANIZATION
Historic Sites Survey, National Park Service

DATE
January 1976

STREET & NUMBER
1100 L Street NW.

TELEPHONE
202-523-5464

CITY OR TOWN
Washington

STATE
D.C. 20240

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL X STATE ____ LOCAL ____

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE DATE

FOR NPS USE ONLY
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

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